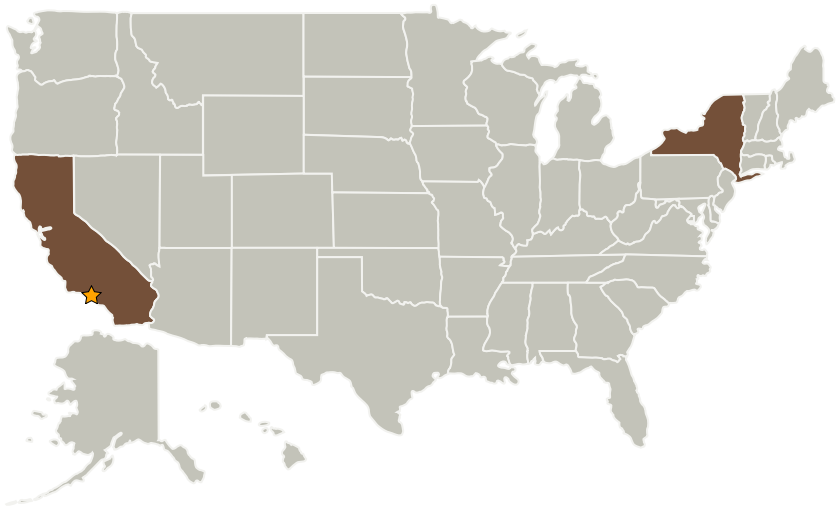
Enabling Technologies for Fabrication of Large Area Flexible Antennas, Phase II

Completed Technology Project (2006 - 2008)

Project Introduction

Flexible, foldable, and/or inflatable antenna systems open up a wealth of opportunities. Integrating antenna elements and related electronics onto flexible substrates, however, poses significant challenges. To our knowledge, there exists no technology that can incorporate a variety of electronic/sensor materials onto large-area flexible substrates to create flexible and conformable circuits in an economical and reliable way. The majority of the limitations stem from processing techniques. Mesoscribe Technologies, a high tech start-up from SUNY-Stony Brook, proposes to apply a breakthrough new direct writing technology to meet the objectives set-forth in the NASA SBIR topic S2.06 Advanced Flexible Electronics. This technology is based on revolutionary advances to modern day thermal spray materials processing enables deposition of wide range of electronic materials onto large areas at low processing temperatures and, for most part, requires no post-processing. The Phase I effort focused on demonstrating proof-of-concept to deposit conducting microstrip lines and sensors on flexible substrates. The Phase II program will be focused exclusively on developing a Direct-Write-Thermal-Spray based large-area patterning capability that is based on roll-to-roll processing to fabricate large-area antennas on flexible substrates, focusing, in particular, on JPL's L-band membrane-based active phased array radar.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
MesoScribe Technologies, Inc.	Supporting Organization	Industry	Setauket, New York

Primary U.S. Work Locations	
California	New York

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves